

Buying a Chuck

By
Russ Fairfield

Which One?

New woodturners continue to seek advice on what chuck to buy, and we continue to confuse them with our answers because everybody has their favorite.

There is always the question of whether we really need a chuck. Too often, we forget that the chuck is a convenience, not a necessity, for turning wood. A faceplate can be used for almost all of our bowl and similar turning. The faceplate is the strongest grip that we can get on a piece of wood, and it would be the preferred way to hold a heavy piece. It's only disadvantage is that it takes longer to use. The argument that it will waste wood can be countered by using a waste-block.

My answer to the question of which chuck is, "*It depends*". It depends on the lathe, the type of work, the size of the wood to be turned, and whether you really need a chuck at all. There is no single chuck that can be all things for all types of woodturning. Differences in quality and function should determine which one is the best for our personal use, but the selection is made too often, by how much money we want to spend.

Over the years that I have been turning wood, starting before we had chucks dedicated to woodturning, I have either owned or used almost every chuck that was or is available. We are fortunate that many of them have disappeared. The survivors are all of the 4-jaw scroll type, and they are all good products. The following are my opinions on the chucks, and why I use what I do. There are less expensive chucks on the market, but the number of woodturners who have been disappointed with them confirms my opinion that they are a waste of money.

Oneway *Stronghold*®

The "Stronghold" chuck with the #2 and #3 (and now the #4) jaws will get a stronger grip on a piece of green wood than any other chuck made (period)!!!

That is a strong statement, but it is true, regardless of the advertising claims that others will make, or their attempts to copy this jaw design, the *Stronghold* jaws will get the better grip on a piece of wood. Add a few drops of thin CA under each jaw before the final squeeze into soft wood, and they will hold even better.

The real advantage of these jaws is a shape that gives wide latitude for the foot diameter with almost no sacrifice in its gripping power. A dovetail jaw of similar size can come close to the holding power of the jaw only when used at its "true circle" diameter where the full perimeter of all four (4) jaws is in contact with the wood. At any other diameter, it will have less of a grip on the wood.

There is a price for this holding ability, and that is that these very aggressive jaws will leave deep marks in the wood, almost forcing the chucking spigot to be a sacrificial part of the turning that has to be removed after the piece is finished. There is no way that the spigot can be left on the finished piece without reshaping it. However, we should be turning and finishing the bases of our turnings anyway.

The repeatability and accuracy of the *Stronghold* is not as good as some of the other chucks. This means that the outside of some pieces may require re-turning when it is reversed in the chuck. Although Oneway doesn't number the face-jaws that grip the wood for any of their chucks, determining their arrangement on the chuck, and chucking diameter that gives the best performance, and always returning them to that position can improve the accuracy of the chuck. This will require making an identification mark on the face-jaw so it can always be screwed to the same base-jaw on the chuck. There is also the problem of wood movement from its being crushed in its mighty grip. This can be minimized with some care in orienting the wood in the chuck and using a lighter grip on the chuck wrench.

For gripping on the inside of a recessed chucking area, dovetail jaws are superior to the standard

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jaws, and two sizes of dovetail jaws are now available from Oneway.

Oneway *Talon*®

This chuck is a smaller version of the *Stronghold* and has the same advantages as the *Stronghold*. It is a good choice for the mini and 12" lathes for all of the same reasons that we would use the *Stronghold* on the larger lathes. Using the larger chuck, whose holding capacity exceeds that of the lathe, provides no advantage.

The good news is that smaller versions of the *Stronghold* face-jaws are "stock" on the smaller *Oneway* and *Talon* chucks. These jaws also have a safety pin on one of the jaws that prevents the novice woodturner from opening them too far. These same jaws can also be adapted for use on the *Nova* chucks by removal of the safety pin on the backside of one of the jaws, a simple job with a pair of pliers.

All of the jaws are interchangeable between the *Talon* and the scroll chuck.

Axminster *Precision*®, *Carlton*®, *Artisan*®, *Woodturners*®, and *Sprite-Mini*®

Unfortunately, only two (2) chucks and a limited variety of the accessory jaws are available from US sources. In the US, "Craft Supplies USA" carries the *Precision* and the *Artisan* (Available only in the US), and accessory jaws at: <http://www.woodturnerscatalog.com/>.

The complete line of Axminster chucks and accessories can be found at The Tool Post at: <http://www.toolpost.co.uk/system/index.html>.

The Tool Post is located in the UK, however their delivery is prompt, and the delivered cost to my shop has been less than that from any US supplier (my experience).

My selection of chucks includes the *Precision*, *Carlton*, and *Sprite-Mini*. I have no experience with either the *Artisan* or the *Woodturners* chucks.

For precision machining with greater accuracy and repeatability, there is nothing better than the Axminster *Precision* chuck and its jaws. This quality is reflected in their higher price. This is definitely a top-of-the-line chuck. The *Precision* has an enclosed construction that includes the pinion gear that turns the scroll, and the chuck wrench is inserted into a square hole in the gear.

The *Carlton* is a smaller lighter weight chuck that accepts the same accessory jaws as the *Precision*. It is an open-back construction with the pinion for driving the scroll attached to the end of the chuck wrench. The *Artisan* replaces the *Carlton* in the Craft Supplies catalog and it is available only in the US. I have not used this chuck, but if it is the same quality as the *Carlton*, it would be a good choice for a precision chuck on any size lathe.

There is an advantage to the enclosed design of the *Precision* in that it protects the drive gears from dust and dirt. Nevertheless, it is not "dust tight" and definitely not "lacquer-proof", the inevitable always happens, and then it becomes more difficult to clean than the open design.

Axminster has always had more accessory jaws available than any other manufacturer, and they continue to add new ones that keep them in the lead for versatility. Vicmark has been expanding their list of jaws that can be used with their chucks in the last couple of years, but they are still a long way from being close to Axminster in both number and quality.

Either Axminster chuck with the dovetail jaws is ideal for turning things from dry wood. The accuracy of the chuck means that I can finish the outside of the piece, and then reverse it without having to re-turn the outside to get a uniform wall thickness. This is important to me because I make many "square" shapes with long curved wings and it would be impossible to re-turn them after reversing the piece in the chuck.

The dovetails made by Axminster have a sharper edge than any other available. This allows me to

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hold large thin pieces like plates or platters in a recess that is only 1/16" deep. Other jaws with their more rounded edges require a deeper recess.

The plates for the large Axminster button jaws are thicker, tighter, and flatter than similar jaws from the other manufacturers. This makes them ideal for holding thin flat work. The buttons are made from a white rubber that will not mar the wood, while all of the others use a black neoprene that will leave black marks on the wood as they age or come in contact with lacquer thinner. The Axminster buttons will also fit the Oneway Jumbo Jaws.

An Axminster advantage is the *O'Donnell* jaws that are available in several sizes. These are a dovetail type jaw whose gripping surfaces are extended out from the face of the chuck, permitting easy access to the backside of the piece for turning. These jaws will allow for turning some pieces where nothing else will work.

Axminster is also making something similar to the Oneway jaws for their chucks. While providing a better grip than a dovetail jaw, they still do not match the gripping power of the Oneway jaws, especially on green wood.

The *Sprite-Mini* is a new small chuck for doing small and miniature turning on a small lathe. It is not available for spindles larger than 1" diameter, and it works best with a chucking spigot between 1" and 1.5" diameter on the piece of wood. This little jewel has all of the precision of the other Axminster products and its price is about \$135.00 (US). The variety of accessory jaws is limited at this time, but I would expect that to change. I highly recommend it for anyone wanting a smaller chuck.

Vicmarc

This line of chucks has always been somewhat restricted in the US because none of our suppliers has chosen to carry the full line of chucks and accessories. While both Packard and Craft Supplies carry these chucks, the last time I looked, only "One Good Turn" in San Antonio, TX, has the full line of Vicmarc chucks and accessories.

For an offshore, and possibly lower cost source, located in Australia, look at the following:
<http://www.woodturning.com.au/>

My personal experience and that of other woodturners with this supplier has been excellent for both service and price.

I have used most of the Vicmarc chucks, but the only one that I have in my collection is a large scroll chuck that has since been replaced by the *Model-140*. My reason for not considering the Vicmarc offerings when I was buying chucks about 10-years ago was their limited selection of accessory jaws and that they were awkward for me to use because of their CCW rotation (discussed separately). Vicmarc has been expanding their list of accessory jaws in recent years.

The Vicmarc geared chucks are a good quality lathe accessory. A nice design feature of the Vicmarc chucks is that the pinion gear in the chuck body uses a chuck-wrench that is the same hex-shape and size as a common Allen-wrench. This is a good feature when the chuck-wrench gets lost in the shavings or among the clutter on the bench.

Scroll Chucks

These chucks use the two (2) Tommy-bars for operation. There is one advantage to using a scroll chuck - it is easier to feel the grip of the chuck on the wood. This makes it possible to hold a delicate piece with a very light touch of the jaws without over-tightening. This "feel" is somewhat removed by the gears that drive the keyed chuck. Someone who is making boxes and similar small items should prefer a scroll chuck.

Both the original *Oneway* and the *Nova* scroll chucks are excellent for smaller work, or for use on

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smaller lathes. These two chucks are almost identical and all of their jaws are interchangeable. The only difference is that *Oneway* uses a similar safety pin as their geared chucks, while the *Nova* does not. This pin has to be removed before installing them on the *Nova*. This is easy to do with a pair of pliers. The *Oneway* has the advantage of the serrated jaw design for a better grip, while the *Nova* uses a dovetail type jaw. We can have the best of both worlds because all of the jaws are interchangeable. The scroll in the *Oneway* is made from harder steel, and there is less of a problem with the scroll wearing, or the holes for the Tommy Bars in the periphery from "wallowing" out from hard use. The average woodturner wouldn't notice this difference, and the *Nova* could be selected on the basis of price alone.

Vicmarc makes their *Model-90* scroll chuck that is a similar size. It is interesting to note that Vicmarc also makes an adapter plate so that all accessory jaws for their *Models 90/100* models can be used on the *Nova* chucks, and consequently, also on the *Oneway*. This makes either the *Oneway* or the *Nova* a good buy for the woodturner who wants a scroll chuck.

There is only one large scroll chuck available and that is the Vicmarc *Model-140*. I have an older version of this chuck that is neither as accurate nor as repeatable as the newer 140. The "Tommy bars" make it easier to use for turning large work where it would be difficult to turn a chuck wrench without using a ratchet handle, and it has the same "feel" for the grip on the wood as the smaller scroll chucks. It is also very fast for doing larger production work where many changes in diameter are required. It has suffered from not having very many jaw options available for it, but that too seems to be changing.

Super Nova

The *Super Nova* is the original *Nova* scroll chuck with the addition of a gear drive. All of the original jaws and accessories will fit the *Super Nova*. In this respect, it has a similar relationship as the *Talon* to the original *Oneway* scroll chuck. The folks that use this chuck are pleased with its performance and its price can be very reasonable with some shopping.

Direction of Rotation

There is one major difference between the *Nova* and the Vicmarc geared chucks and those made by *Oneway* and *Axminster*. The latter two use a clockwise (CW) rotation of the chuck-wrench to close their jaws, while the *Nova* and Vicmarc that are made in New Zealand and Australia use a counter-clockwise (CCW) rotation to close their jaws. I understand that Vicmarc has recently changed the rotation to CW on some of their new chucks, but I have not seen one of them yet.

This not a big deal, except that I have used a lot of chucks during my years of working in a machine shop and doing woodturning, and these are the only ones that I have ever used that turn "backwards" (CCW). The result has been many pieces falling out of the chuck while I thought I was tightening it. This at the least an embarrassment while giving a demonstration, and it is a good way to damage or break a piece of turned wood. At the worst, it is a safety hazard and I have had a few black toenails from falling wood as proof. This will not be a problem if you have never used another chuck and one of these will be the only chuck that you will own.

Rust

Resistance to corrosion is often forgotten when we select a chuck. Rust has an effect on the appearance of the chuck, and it could have a detrimental effect on its use if it isn't controlled. Rust will leave stains on the wood or on your hands. It can also interfere with the fit of the sliding jaws and how easily the chuck operates. A light coating of oil will protect the scroll and other internal parts.

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However, when we use oil to protect the jaws and external surfaces, it will have to be cleaned before using the chuck.

All Oneway chucks are almost totally resistant to corrosion. The "bright" steel in the body is nickel-plated and all other parts and the jaws have been treated to a corrosion-resistant process that leaves an oxide coating that is very durable in frequent use.

The Nova chucks have a protection that is similar to that used by Oneway. While I don't own any of them, I have not seen any of them rusting away in other shops and studios.

The Vicmarc and Axminster chucks will rust faster than any other piece of steel in the shop. All of the offerings from both are machined all over and there is no corrosion-resistant coating on any of their parts. Faster corrosion is one of the disadvantages to the quality of steel used by both manufacturers. With a little care and an occasional coat of oil, there will be no rusting problems with any of them.

I have never experienced rust on a Oneway chuck or accessory, even during the wet cold winters of Western Washington State, and with continued use on very wet wood. Rust is always a problem with the Axminster and Vicmarc chucks, and I have to give them a coating of oil After each use to keep them from rusting while they are sitting on the shelf. I finally gave up on my Vicmarc because it was easier to let it go than try to keep up with it, and it is now a uniform rusty-red color all over. It isn't pretty, but it still works.